

Claims 1-3, 6, 7, 10-15, and 17-31 are rejected. The Applicants respectfully request an indication of allowance of these claims in view of the following remarks.

Claims 1-3, 6, 7, 10-15, 17-26, 28, and 31 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Pub. No. 2003/0203210 ("Graff '210"). However, Graff '210 and Graff '067, alone or in any proper combination, have not been shown to have described or made obvious a method for forming an arrangement of two barrier layers on a substrate including "modifying at least a portion of [a] second surface of [a] first ceramic barrier layer such that the second surface of the first ceramic barrier layer comprises a material different from the first material of the first ceramic barrier layer below the second surface to introduce first nucleation sites on the second surface, and forming a second barrier layer directly on the second surface of the first ceramic barrier layer . . .," as recited in claim 1.

Graff '210 described a multi-layer environmental barrier coating 10 including a flexible substrate 12, a foundation stack 20, at least one barrier stack 30, and a topmost isolation layer.¹ "[T]he foundation stack 20 includes (or consists of) a foundation barrier layer 22 deposited onto the flexible substrate 12 and an organic layer 24 deposited over the foundation barrier layer 22."² One or more barrier stacks 30 are deposited over the foundation stack 20.³ "Each barrier stack 30 includes (or consists of) a barrier-stack barrier layer 32 and an organic layer 34."⁴

Graff '210 described that "[p]lasma-treatment of the barrier layers 22 and 32 following their deposition may further reduce the amount of contaminants that have migrated through or settled onto the surface from the atmosphere of the working chamber."⁵ "As a result of plasma-treatment . . . the surfaces of the barrier layers 22 and 32 may undergo both structural and chemical modification, which may improve surface conditions for subsequent deposition of the organic layers via PML (STEPS 234, 244)."⁶ Thus, as shown in FIG. 2 of Graff '210,

¹ See, e.g., Graff, ¶[0040].

² *Id.*, ¶[0042].

³ See e.g., *id.*, ¶[0042].

⁴ *Id.*

⁵ *Id.*, ¶[0082].

⁶ *Id.*

reproduced below, Graff '210 did not describe or make obvious applying a second barrier layer directly on a modified second surface of a first barrier layer, as recited in claim 1.

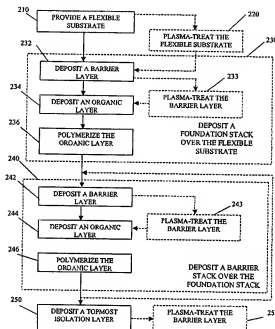


FIG. 2

In another cited method of fabricating the multi-layer environmental barrier coating 10, Graff '210 described plasma treatment of the flexible substrate 12, which is formed of a polymeric material.⁷ However, the Applicants respectfully submit that a person of ordinary skill in the art would not have understood plasma treatment of polymeric material to have described plasma treatment for changing the material on the surface of a ceramic barrier layer to a material different from the material of the first ceramic layer.

In yet another cited portion, Graff '210 described plasma treating a barrier layer 22 to remove contaminants to dehydrate the surface.⁸ Thus, the Applicants respectfully submit that a person of ordinary skill in the art would have understood this cited portion to have described plasma treatment to clean water from the surface of the barrier layer 22 or to modify the surface area and density of the treated surface. For at least this reason, such plasma treatment did not

⁷ See, e.g., *id.*, ¶[0065].

⁸ See, e.g., *id.*, ¶[0073].

describe or make obvious changing the material on the surface of a ceramic barrier layer to a material different from the material of the first ceramic layer.


Claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Graff '210 in light of U.S. Pat. No. 6,522,067 ("Graff '067"), cited as having described a ceramic barrier containing encapsulation. However, Graff '067 has not been shown to cure the deficiencies of Graff '210 described above with respect to claim 1. For at least this reason, Graff '210 and Graff '067, alone or in any proper combination, have not been shown to form the basis of a *prima facie* case of obviousness of claim 27.

All of the dependent claims are patentable for at least similar reasons as those for the claims on which they depend are patentable. Canceled claims, if any, have been canceled without prejudice or disclaimer. Any circumstance in which the Applicants have (a) addressed certain comments of the Examiner does not mean that the Applicants concede other comments of the Examiner, (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims, or (c) amended or canceled a claim does not mean that the Applicants concede any of the Examiner's positions with respect to that claim or other claims.

Filed herewith is a Petition for Extension of Time. All fees are being paid concurrently herewith on the Electronic Filing System by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050, referencing Attorney Docket No. 12406-0083001.

Respectfully submitted,

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